

**SECOND TEN-YEAR OZONE MAINTENANCE PLAN  
SIP REVISION FOR**

**THE  
EDMONSON COUNTY  
OZONE MAINTENANCE AREA**



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## **INTRODUCTION**

The Commonwealth of Kentucky, eight years after redesignation to attainment pursuant to 175A(b) of the Clean Air Act (CAA), hereby submits to the U.S. Environmental Protection Agency (U.S. EPA) a State Implementation Plan (SIP) revision, which provides an additional 10-year ozone maintenance plan for Edmonson County. Additional ten-year maintenance plans are required to be submitted to the U.S. EPA in 2003 for areas redesignated to attainment for the 1-hour ozone standard during 1995. Edmonson County was redesignated to attainment in January 1995 for the 1-hour National Ambient Air Quality Standard (NAAQS) for ozone and continues to maintain that standard. This SIP revision is based on thirteen (13) years of ozone monitoring data that indicates continued maintenance of the 1-hour ozone standard, the implementation of certain permanent and enforceable reductions in ozone precursor emissions in the area, and a maintenance plan that runs through 2015.

## **BACKGROUND**

In accordance with the Clean Air Act Amendments (CAAA) of 1990, a November 6, 1991, *Federal Register* notice designated Edmonson County as marginal nonattainment for the 1-hour ozone standard effective on January 6, 1992.<sup>1</sup> In a November 3, 1994, *Federal Register* notice, the U.S. EPA approved the redesignation of Edmonson County from marginal nonattainment to attainment for the 1-hour ozone standard effective on January 3, 1995<sup>2</sup>.

## MAINTENANCE OF AIR QUALITY STANDARD

The January 6, 1992, ozone nonattainment designations were based on air quality data collected from 1987 through 1989, which included the summer of 1988, one of the hottest summers on record.

Since then, the ambient air quality data for the ozone monitor in Edmonson County indicates a continued maintenance of the 1-hour ozone standard. The following table is a summary of the days in which the 1-hour ozone standard was exceeded in Edmonson County.

**TABLE 1**  
**SUMMARY OF EDMONSON COUNTY'S 1-HOUR OZONE EXCEEDANCES**

COUNTY	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03
EDMONSON	0	0	0	0	0	0	0	0	0	1	0	0	0	0

This same monitoring information for this area is contained in the U.S. EPA's Aerometric Information Retrieval System (AIRS) database (*See Appendix A for ozone monitoring information for this area*). The ambient ozone monitoring data was collected at a site that was selected with assistance from the U.S. EPA and is considered to be representative of the area of highest concentration. The collected data were quality-assured in accordance with 40 CFR Part 58 and recorded in the U.S. EPA's AIRS database. It is anticipated that the monitor will remain at its current location for the duration of the maintenance plan period (2000-2015). A map indicating the location of the monitor in Edmonson County is included in Appendix B.

## **PERMANENT AND ENFORCEABLE EMISSION REDUCTIONS**

### **POST-1990 EMISSION REDUCTION PROGRAMS**

The continued improvement and maintenance of the air quality in Edmonson County, as verified by the lack of violations of the 1-hour ozone standard, is due to the implementation of permanent and enforceable emission reductions.

Emission reductions (in tons per day, or tpd) are described from various programs and initiatives. The following categories of sources have shown or are expected to show emission reductions in volatile organic compounds (VOC), carbon monoxide (CO), and oxides of nitrogen (NO<sub>x</sub>) emissions due to regulatory measures implemented since the passage of the 1990 Clean Air Act Amendments.

For this SIP revision, Kentucky chose to use 2000 as the year for developing a new comprehensive ozone precursor emissions inventory from which certain projected emissions could be developed for 2004, 2005, 2009, 2012 and 2015. Maintenance is demonstrated by comparing the attainment year emissions to the emissions in the years listed above. The attainment year mobile emissions were recalculated using MOBILE 6.2 in order to allow an accurate comparison to mobile emissions in the years listed above in order to demonstrate continued maintenance. The following information outlines emission reduction measures that have occurred from 1990 through 2000, and those implemented after 2000 and projected to 2015.

#### **Highway Mobile Source Reductions**

##### ***Federal Motor Vehicle Control Program (FMVCP)***

Permanent and enforceable emission reductions have been and continue to be achieved each year

through this program. In recent years, stricter federal requirements have been imposed on automobile manufacturers for improved fuel-efficiency and extended warranties for emission control devices. Documentation of these emission reductions is contained in the highway mobile modeling runs (See Appendix H).

### ***Fleet Turnover of Automobiles***

Permanent and enforceable emission reductions have occurred in Edmonson County as a result of fleet turnover of automobiles. As older, less efficient automobiles are replaced by newer, more efficient models, the emissions decrease on a per mile basis. Quantification of these reductions is contained in the highway mobile modeling runs.

### ***Lower Reid Vapor Pressure***

The 1990 CAAA mandated that the Reid Vapor Pressure (RVP) of gasoline decrease from 10.5 pounds per square inch (psi) in 1988, to 9.0 psi in 1992 during the ozone season. Additionally, a 1992 National Institute for Petroleum and Energy Research (NIPER) study indicated that 8.6 psi RVP was more accurate for Kentucky. With EPA concurrence, Kentucky has used 8.6 as input for the highway mobile model (i.e., Mobile6.2). Quantification of these reductions is contained in the mobile modeling.

### ***Tier 2 Motor Vehicle Emissions and Fuel Standards***

Permanent and enforceable reductions will occur through this program. Beginning in 2004, this program will phase in a single set of tailpipe emission standards that will apply to all passenger cars, light trucks, and larger passenger vehicles operated on any fuel. To enable the control technology to be introduced and to maintain its effectiveness, this program also requires reduced



gasoline sulfur levels nationwide. The reduction in sulfur levels will also contribute directly to cleaner air in addition to its beneficial effects on vehicle emission control systems. Quantification of these reductions is contained in the highway mobile modeling runs.

### ***Heavy-Duty Engine and Vehicle and Fuel Standards***

Permanent and enforceable reductions will occur through this program. This program will result in particulate matter and NO<sub>x</sub> emission levels that are 90 percent and 95 percent below the standard levels in effect today, respectively. The rule mandates a 97 percent reduction in the sulfur content of diesel fuel and sets a 0.01 grams per brake-horsepower-hour (g/bhp-hr) PM limit for new heavy-duty diesel engines. Quantification of these reductions is contained in the highway mobile modeling runs.

### **Point Source Emission Reductions**

Not Applicable.

### **Area Source Reductions**

Several control programs have been implemented to substantially reduce area source emissions from the following source categories.

### ***Architectural Coatings, Traffic Paints, Auto Body Refinishing, and Commercial/Consumer Products***

The U.S. EPA has promulgated federal regulations to reduce the VOC emissions from the application of Architectural and Industrial Maintenance Coatings (e.g., traffic paints and coatings for bridges), Auto Body Refinishing, and Commercial Consumer Products. The federal requirements for VOC in paints used in architectural coatings will reduce emissions from these products by 20% according to guidance provided by the U.S. EPA. The amount of reduction

from Auto Body Refinishing has been calculated at 27%. Commercial/Consumer Product emission reduction credit was calculated at 20%. The area source VOC emission reductions due to these federal control measures are reflected in the area source VOC emissions provided in this document.

### **Non-Highway Mobile Source Reductions**

Certain federal rules have been implemented since the early 1990s that have resulted in permanent and enforceable emission reductions from nonroad sources (e.g., small engines, construction equipment). The reductions were determined using the U.S. EPA's Nonroad model and are reflected in the emissions provided in this document.

**TABLE 2**  
**EDMONSON COUNTY 1-HOUR OZONE MAINTENANCE AREA**  
**VOC EMISSIONS FOR 1990, 2000, & 2004**  
**(TONS PER DAY)**

<b>SOURCE CATEGORY</b>	<b>1990 ATTAINMENT YEAR</b>	<b>2000 NEW PLAN</b>	<b>2004 LAST YEAR OLD PLAN</b>
POINT	0.00	0.00	0.00
AREA	0.74	0.89	0.82
HIGHWAY MOBILE	1.57*	0.73	0.72
NON-HWY MOBILE	0.45	0.27	0.50
<b>TOTAL EMISSIONS</b>	<b>2.76*</b>	<b>1.89</b>	<b>2.03</b>

\* Recalculated using MOBILE 6.2

Table 2 summarizes VOC emissions in tons per day (tpd), from 1990 and 2000, and also includes any growth in emissions that may have occurred since the 1990 attainment year. The mobile emissions numbers were generated using MOBILE 6.2. In addition, included in the Table 2

emissions are any permanent and enforceable emission reductions achieved in the area.

## **MAINTENANCE PLAN**

Section 175A(b) of the CAA requires that eight years after formal redesignation that states submit a SIP revision that provides an additional ten-year ozone maintenance plan. Since Edmonson County was redesignated effective on January 3, 1995,<sup>2</sup> a revised maintenance plan is required for this area in 2003. EPA must approve the revised plan that meets the requirements of Section 175A(b). For this SIP revision, Kentucky has chosen to project emissions through the year 2015.

The maintenance plan includes an emissions inventory for the year 2000, projected inventories through 2015, a commitment to maintain the existing monitoring system, and contingency measures that will become effective should the area fail to continue to maintain the 1-hour ozone standard.

## **2000 MAINTENANCE AREA EMISSIONS INVENTORY**

As the part of this SIP revision, a new ozone precursor emissions inventory for 2000 was developed for Edmonson County. A copy of the 2000 maintenance area emissions inventory methodology and documentation is included as Appendix C. This 2000 emissions inventory reflects any emission controls applicable for the area. The 2000 emissions inventory was developed in accordance with EPA guidance as follows:

- (1) utilizing where feasible EPA's Emissions Inventory Improvement Program and EPA National Emission Inventory (NEI) guidance. As recommended in NEI development

guidance, where applicable the FAA's Emission and Dispersion and Modeling System model was utilized to calculate commercial aircraft emissions for 2000, EPA's (June 2000) Nonroad Model was used to determine certain other nonroad (i.e., other Non-Highway) mobile source category emissions for 2000, 2004, 2005, 2009, 2012, and 2015, MOBILE6.2 was utilized to determine highway mobile source emissions for 2000, 2004, 2005, 2009, 2012, and 2015, and the U.S. EPA's 1997 biogenic emission estimates for Kentucky counties were included in the 2000 emissions inventory per EPA guidance;

- (2) utilizing where applicable previous EPA emission inventory guidance (e.g., 1990 base year and periodic emission inventories); and
- (3) utilizing inventory guidance obtained directly from EPA Region 4 personnel (e.g., phone calls, e-mails).

#### **EMISSION PROJECTION METHODOLOGY**

The 2000 Maintenance Area Emissions Inventory for Edmonson County was used to project emissions into the future. Kentucky believes this inventory to be a comprehensive inventory of actual emissions for the area with the best basis for which to make any future projections. A copy of the 2000 maintenance area emissions inventory methodology and documentation is included as Appendix C.

Tables detailing the category projection inventory that predicts emissions for VOC, CO, and NO<sub>x</sub> for years 2004, 2005, 2009, 2012, and 2015 are included for Edmonson County in Appendix D. Biogenic emissions have been excluded from these tables. Biogenic emissions for 2000 can be

found in Appendix C. Based on information received from EPA, biogenic emissions are expected to remain stable throughout the projection period.

Tables 3-5 show the projection of emissions through 2015. Edmonson County's projected 2015 total emissions are below the 1990 total emissions, thus demonstrating the continued maintenance of the 1-hour ozone standard. Tables 4 and 7 are not used to set budgets, but are included for informational purposes only.

**TABLE 3**  
**EDMONSON COUNTY 1-HOUR OZONE MAINTENANCE AREA**  
**1990, 2000, AND PROJECTED VOC EMISSIONS**  
**(TONS PER DAY)**  
**1990-2015**

	<b>1990</b>	<b>2000</b>	<b>2004</b>	<b>2005</b>	<b>2009</b>	<b>2012</b>	<b>2015</b>
POINT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AREA	0.74	0.89	0.93	0.94	0.98	1.02	1.05
HIGHWAY	1.57*	0.73	0.60	0.55	0.45	0.38	0.33
NON-HWY	0.45	0.27	0.26	0.25	0.23	0.23	0.23
<b>TOTAL</b>	<b>2.76*</b>	<b>1.89</b>	<b>1.79</b>	<b>1.74</b>	<b>1.66</b>	<b>1.63</b>	<b>1.61</b>

\*Recalculated using MOBILE 6.2

**TABLE 4**  
**EDMONSON COUNTY 1-HOUR OZONE MAINTENANCE AREA**  
**1990, 2000, AND PROJECTED CO EMISSIONS**  
**(tons per day)**  
**1990-2015**

	<b>1990</b>	<b>2000</b>	<b>2004</b>	<b>2005</b>	<b>2009</b>	<b>2012</b>	<b>2015</b>
POINT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AREA	0.68	1.57	1.64	1.66	1.74	1.81	1.87
HIGHWAY	15.61*	7.86	6.57	6.04	5.20	4.89	4.73
NON-HWY	2.37	1.74	1.78	1.81	1.91	2.00	2.07
<b>TOTAL</b>	<b>18.66*</b>	<b>11.17</b>	<b>9.99</b>	<b>9.51</b>	<b>8.85</b>	<b>8.70</b>	<b>8.67</b>

\*Recalculated using MOBILE 6.2

**TABLE 5**  
**EDMONSON COUNTY 1-HOUR OZONE MAINTENANCE AREA**  
**1990, 2000, AND PROJECTED NO<sub>x</sub> EMISSIONS**  
**(tons per day)**  
**1990-2015**

	<b>1990</b>	<b>2000</b>	<b>2004</b>	<b>2005</b>	<b>2009</b>	<b>2012</b>	<b>2015</b>
POINT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AREA	0.04	0.06	0.06	0.06	0.06	0.07	0.07
HIGHWAY	1.08*	1.09	0.95	0.91	0.72	0.56	0.43
NON-HWY	0.37	0.52	0.48	0.48	0.43	0.40	0.38
<b>TOTAL</b>	<b>1.49*</b>	<b>1.67</b>	<b>1.49</b>	<b>1.45</b>	<b>1.21</b>	<b>1.03</b>	<b>0.88</b>

\*Recalculated using MOBILE 6.2

The emissions inventory is broken down into four components: point, area, highway mobile, and non-highway mobile sources. Using 2000 as the new emissions year, the subsequent years were chosen at three-year or longer intervals that project maintenance for at least a 10-year period pending approval of the revision to the SIP. Necessary calculations for the projections were made using EXCEL software. A description of how growth factors for each emission category were obtained and used follows. The documentation showing how emissions were grown is included in Appendices E through H.

### **Point Source Projections**

For this inventory purpose, point sources are defined as stationary sources that emit 10 tons or more per year (tpy) of VOC, or 100 tpy or more of NO<sub>x</sub> or CO. Emissions are calculated from data collected annually from point sources. Point source information is stored in an existing Kentucky I-Steps database and certain information from this database has been provided for the

U.S. EPA's NEI.

Utilizing Standard Industrial Codes (SIC), all point source emission projections were based on growth factors calculated using Bureau of Economic Analysis (BEA) projection data for employment, as suggested by the U.S. EPA and utilized for previous point source projections. The point source data provided SIC codes used to determine a short title description that matched the corresponding description found in the BEA data. The application of growth factors for each projection was then used for point sources. Appendix E provides information on how point source projections were determined.

### **Area Source Projections**

Area sources can be defined as those sources that are generally too small and/or too numerous to be handled individually in the point source inventory. Emissions are estimated by multiplying an emission factor by a known indicator of collective activity such as number of employees or population. For area source emission projections, population growth factors for each chosen year were calculated using an exponential formula in the EXCEL software. The application of these growth factors for each projection was then used for area sources. Information used to calculate growth factors, including population information used to project area sources was provided by the University of Louisville Urban Data Center<sup>3</sup> and can be found in Appendix F.

### **Non-Highway Mobile Source Projections**

The non-highway mobile category is broken down into three groups that include 2 and 4-cycle gasoline engines and diesel engines (other non-highway engines), railroad locomotives, and aircraft. Emissions are estimated by multiplying the base year inventory by a known indicator of

collective activity such as fuel consumed or landing/takeoff operations. For locomotive and aircraft emission projections, population growth factors for each chosen year were calculated using the before mentioned formula. The application of these growth factors for each projection was then used for each of these non-highway categories. For other non-highway categories (e.g., industrial equipment, tractors, leaf blowers), the U.S. EPA's June 2000 nonroad model was used to determine the future year projections. Nonroad model and non-highway projection information can be found in Appendix G. Updated minimum and maximum summer temperatures and ambient temperatures were utilized for input into the nonroad model. EPA Volume IV mobile source guidance was followed in determining the updated temperature data. Please see Appendix C for specific temperature documentation.

### **Highway Mobile Source Projections**

To calculate highway mobile source emissions, the Division obtained data on Daily Vehicle Miles Traveled (DVMT) and speeds for 2000, 2004, 2005, 2009, 2012, and 2015 from the Kentucky Transportation Cabinet. The Division ran EPA's MOBILE6.2 model, the latest highway mobile source emission factor estimation modeling software approved by EPA, to derive appropriate projection year emission factors that were multiplied by the corresponding DVMT to determine the projected highway mobile source emissions. These data and documentation on how these projections were performed can be found in Appendix H, including MOBILE6.2 input and output files used to compute the highway mobile source 2000 emissions and subsequent emission projections. Updated minimum and maximum summer temperatures were used for the highway mobile source calculations (*See Appendix C for specific temperature information*).



An updated motor vehicle emissions budget for 2004 using MOBILE6.2 was developed in consultation with the U.S. EPA, in addition to a 2015 motor vehicle emissions budget. It is important to note that both the 2004 and 2015 mobile source emissions projections included in Table 6 and 8 of this section will apply to future transportation conformity determinations for Edmonson County. For transportation plans that involve the year 2014 or before, the applicable budget for the purposes of conducting transportation conformity analyses will be the 2004 VOC (0.60 tpd) and NO<sub>x</sub> (0.95 tpd) motor vehicle emissions budget for this maintenance area. For transportation plans that involve the year 2015 or beyond, the applicable budget for the purposes of conducting transportation conformity analyses will be the 2015 VOC (0.33 tpd) and NO<sub>x</sub> (0.43 tpd) motor vehicle emissions budget for this maintenance area. The MVEBs are directly reflective of the on-road mobile emissions for the specified year and pollutant.

**TABLE 6**  
**EDMONSON COUNTY 1-HOUR OZONE MAINTENANCE AREA**  
**HIGHWAY MOBILE SOURCE PROJECTED VOC EMISSIONS**  
**(TONS PER DAY)**  
**2000-2015**

COUNTY	2000	2004	2005	2009	2012	2015
EDMONSON	0.73	0.60	0.55	0.45	0.38	0.33

**TABLE 7**  
**EDMONSON COUNTY 1-HOUR OZONE MAINTENANCE AREA**  
**HIGHWAY MOBILE SOURCE PROJECTED CO EMISSIONS**  
**(tons per day)**  
**2000-2015**

COUNTY	2000	2004	2005	2009	2012	2015
EDMONSON	7.86	6.57	6.04	5.20	4.89	4.73

**TABLE 8**  
**EDMONSON COUNTY 1-HOUR OZONE MAINTENANCE AREA**  
**HIGHWAY MOBILE SOURCE PROJECTED NO<sub>x</sub> EMISSIONS**  
**(tons per day)**  
**2000-2015**

COUNTY	2000	2004	2005	2009	2012	2015
EDMONSON	1.09	0.95	0.91	0.72	0.56	0.43

**TOTAL OF ALL EMISSIONS**

It is important to recognize the differences between the 1990 tpd for each pollutant and the projected tpd for each pollutant for the year 2015. Table 9 that follows shows that Edmonson County projected 2015 emissions for all pollutants are less than the 1990 attainment year emissions. This demonstrates continued maintenance of the 1-hour ozone standard.

**TABLE 9**  
**EDMONSON COUNTY 1-HOUR OZONE MAINTENANCE AREA**  
**1990 – 2000 – 2015 EMISSIONS COMPARISONS**  
**VOC EMISSIONS**  
**(TONS PER DAY)**

	1990			2000			2015		
	VOC	CO	NO <sub>x</sub>	VOC	CO	NO <sub>x</sub>	VOC	CO	NO <sub>x</sub>
POINT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AREA	0.74	0.68	0.04	0.89	1.57	0.06	1.05	1.87	0.07
HIGHWAY MOBILE	1.57*	15.61*	1.08*	0.73	7.86	1.09	0.33	4.73	0.43
NON-HWY MOBILE	0.45	2.37	0.37	0.27	1.74	0.52	0.23	2.07	0.38
<b>TOTAL EMISSIONS</b>	<b>2.76*</b>	<b>18.66*</b>	<b>1.49*</b>	<b>1.89</b>	<b>11.17</b>	<b>1.67</b>	<b>1.61</b>	<b>8.67</b>	<b>0.88</b>

\*Recalculated using MOBILE 6.2

## **PLAN TO MAINTAIN AIR QUALITY**

The Commonwealth of Kentucky and the U.S. EPA have instituted programs that will remain enforceable and are hereby submitted as a plan to maintain air quality which meets the 1-hour ozone NAAQS. Sources cannot remove emission controls previously required.

- All new major VOC sources locating in Kentucky are subject to RACT;
- All major modifications to existing major VOC sources are subject to RACT requirements;
- Federal Motor Vehicle Control Standards apply in Kentucky;
- Federal controls on the VOC content for Architectural & Maintenance Paints, Auto Body Shops, and Consumer Products;
- Prevention of Significant Deterioration requirements; and
- Federal controls on certain nonroad engines (e.g., diesel and other fuel requirements, industrial diesel equipment, locomotives) after 1990.

## **EXISTING MONITORING NETWORK**

In addition to the maintenance plan discussed above, the existing ozone monitor located in Edmonson County has been approved by the U.S. EPA. The monitor will continue to remain operational in accordance with 40 CFR Part 58.

## **CONTINGENCY MEASURES**

As required, triennial reviews of actual emissions for the maintenance areas will be performed using the latest emission factors, models, and methodologies. The Commonwealth will begin the triennial assessments in 2006 for calendar year 2003 and continue as required by the U.S. EPA. At the time of this periodic inventory, the Commonwealth will review the assumptions made for the purpose of the maintenance demonstration concerning projected growth of activity levels. If

any of these assumptions appear to have changed substantially, then the Commonwealth will re-project emissions.

In the event that exceedances of the 1-hour ozone standard are measured in Edmonson County, or if periodic emission inventory updates reveal excessive or unanticipated growth greater than 10% in ozone precursor emissions, the state will evaluate existing control measures to see if any further emission reduction measures should be implemented at that time. In the event of a monitored violation of the 1-hour ozone standard in Edmonson County, the Commonwealth commits to adopt, within nine months, one or more of the following contingency measures to re-attain the standard. All regulatory programs will be implemented within 18 months.

- Requirement for Stage I Vapor Recovery;
- Requirement for Stage II Vapor Recovery;
- Open burning ban during summer ozone season;
- Restriction of certain roads or lanes to, or construction of such roads or lanes for use by, passenger buses or high-occupancy vehicles;
- Trip-reduction ordinances;
- Employer based transportation management plans, including incentives;
- Programs to limit or restrict vehicle use in downtown areas, or other areas of emission concentration, particularly during periods of peak use;
- Programs for new construction and major reconstructions of paths or tracks for use by pedestrians or by non-motorized vehicles when economically feasible and in the public interest.

The Commonwealth also reserves the right to implement other contingency measures if new control programs should be developed and deemed more advantageous for the area.

## **PUBLIC PARTICIPATION**

Kentucky conducted a public hearing to receive comments on this proposed SIP revision for Edmonson County on March 31, 2004, at the Kentucky Division for Air Quality's Central Office located at 803 Schenkel Lane, in Frankfort, Kentucky. A copy of the public hearing notice is

included in Appendix I.

A copy of the Environmental and Public Protection Cabinet's responses to comments received during that public review period is included in Appendix J.

## REFERENCES

1. November 6, 1991, *Federal Register* Notice. Final designation of Edmonson County to marginal nonattainment for the 1-hour ozone standard -Effective January 6, 1992.
2. November 3, 1994, *Federal Register* Notice. Approval of Redesignation to Attainment for Edmonson County – Effective January 3, 1995.  
  
September 3, 1998, *Federal Register* Notice. Approval of Revision to the Edmonson County Maintenance Plan – Revised Motor Vehicle Emissions Budgets (MVEBs) for the Edmonson County Area – Effective on November 2, 1998.  
  
April 9, 2002, *Federal Register* Notice. Clarification Regarding the Year (2004) of the Revised Motor Vehicle Emissions Budgets (MVEBs) for the Edmonson County Area – Effective on May 9, 2002.
3. University of Louisville – State Data Center - Population Projections for Kentucky.